Staff Summary
Method 2B Application
Duonix Beatrice, LP
Corn Oil, Used Cooking Oil, and Tallow to Biodiesel Pathways
(BIOD032, BIOD033, BIOD034)

Deemed Complete Date: July 06, 2015
Posted for Comment Date: August 07, 2015
Certified Date: August 18, 2015

Pathway Summary

Duonix Beatrice, LP (henceforth Duonix) will produce Midwestern mixed-feedstock fatty acid methyl ester (FAME) biodiesel (BD) at its newly constructed and soon to be operational Beatrice, Nebraska plant. The plant is permitted to produce 62.5 million gallons of BD annually. Duonix will produce BD from the following three feedstocks: tallow (high-energy rendered), used cooking oil (cooking required), and corn oil (WDGS or DDGS associated production). Duonix's BD process converts fats, oils, and free fatty acids into biodiesel.

Duonix plans to produce biodiesel in the fourth quarter of 2015 when construction is scheduled to end. Because Duonix does not have two years of data based upon normal operation, the pathways discussed in this summary are prospective (provisional) until the data has been received by staff and is used to confirm that the pathway CIs are less than or equal to the CIs in the table below. Duonix has estimated their BD CIs conservatively high to ensure the CI of their BD is less than or equal to those tabulated below, during and at the conclusion of their prospective period and for the duration of the pathways. Duonix may acquire and monetize LCFS credits during the prospective (provisional under the new regulation) period after their pathway has been certified. Pathway certification occurs after the 10-day public comment period, after which the pathways without public comments are posted to the Method 2 LCFS website.

Duonix's corn oil and used cooking oil pathways utilize feedstock lifecycle analysis (LCA) from existing Low Carbon Fuel Standard (LCFS) biodiesel pathways. The tallow to BD pathway uses the tallow rendering assumptions and resulting emissions from a Method 2B (effectively a Method 1) pathway authored by the National Biodiesel Board (NBB) for rendered and mixed animal fats to BD. The tallow-rendering phase of Duonix's tallow to BD pathway is also similar to the rendering information and GHG emissions in the LCFS rendered tallow to renewable diesel Method 1 pathway. Duonix used feedstock supply chain specific parameters for transportation of the feedstocks to Duonix as well as the grid electricity utilized to produce the feedstocks.

Carbon Intensity of the Fuel Produced

Duonix's production process results in prospective (provisional) pathway CIs (see table below) that are greater than the respective Method 1 reference pathways. Due to their

CIs being higher than the respective Method 1 reference pathways, Duonix had to apply under Method 2B. Because Duonix's application was submitted under the Method 2B process, it is not subject to the substantiality requirements with which Method 2A applications must comply (a minimum improvement of five gCO_2e/MJ, and a minimum production volume of ten million gallons per year).

Proposed Lookup Table Entries

Fuel	Pathway Identifier	Pathway Description	Carbon Intensity in gCO_2e/MJ		
			Direct Emissions	Land Use or other Indirect Effects	Total
Biodiesel	BIOD032	2B Application*: Midwest Corn Oil extracted at Dry Mill ethanol plants, WDGS or DDGS; Biodiesel Produced in Nebraska; NG	36.22	0	36.22
Biodiesel	BIOD033	2B Application*: Midwest Used Cooking Oil (UCO) where "cooking" is required; Biodiesel Produced in Nebraska; NG	26.28	0	26.28
Biodiesel	BIOD034	2B Application*: Midwest high energy rendered tallow; Biodiesel Produced in Nebraska; NG	50.05	0	50.05

*Specific Conditions Apply

<u>Operating Conditions</u> (*Specific Conditions Apply)

Operations at the plant will be subject to the following conditions designed to ensure that the CI of the of the BD produced at the Duonix plant will remain at or below the value appearing in the above table for all volumes of BD sold in California:

1) Staff must receive the RFS2 third-party engineering report once Duonix is registered under the RFS2 program in order for Duonix to sell fuel in California.
2) Staff must receive any updates or changes to their air quality construction permit or similar permits.

3) Duonix must submit two years of quarterly operating data that is indicative of long-term stable operation and GHG emissions encompassed in the pathway CIs in the table below. The data must be submitted every quarter once Duonix Beatrice is operating normally.
4) Staff will recertify Duonix's pathways under the new regulation if desired. Staff will notify applicants when recertification starts and applicants will be able to opt-into the recertification. The prospective (provisional under the new regulation) requirements of this pathway (primarily data) will be carried over into the new regulation if recertification (or a new application) is desired by Duonix. All applicable processes, policies, data required, and specific legal requirements will apply to all pathways applied for under the new 2016 planned-inception LCFS regulation.
5) Except for periods of abnormal operations, such as planned maintenance or unpredictable, unavoidable, and uncontrollable *force majeure* events, the resulting fuel CI, which is primarily based on total thermal and electrical energy use, shall not be exceeded.
6) All gallons produced under all certified LCFS Method 2 pathways shall inherit the same CI increment from the consumption of process energy at the plant. The applicants may not allocate process energy CIs so as to reduce the total life cycle CI of some subset of the gallons produced (e.g., those being shipped to California) and increase the CI of the remaining gallons.

Staff Analysis and Recommendation

Staff has reviewed Duonix's Method 2B application, and finds the following:

- Staff has replicated, using the CA-GREET spreadsheet, the carbon intensity values calculated by the applicant.
- Staff has concluded that the plant's actual energy consumption and specified material inputs is not likely to exceed the energy or use consumption levels specified in Duonix's Method 2B prospective (provisional) application.
- Staff will confirm Duonix's pathway CIs during the prospective (provisional) period of the pathways as outlined in this summary and the regulation.

Based on these findings, staff recommends that Duonix's application for these three Method 2B pathways be approved.